

A new species of *Tenothrips* pollinating *Dipterocarpus sublamellatus* in Malaysia

Y.F. NG¹, N. AIN¹ & K.H. LAU²

¹Centre for Insect Systematics, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia.

E-mail: ng_yf@ukm.edu.my

²Forest Biodiversity Division, Forest Research Institute Malaysia, 52109 Kepong, Selangor Darul Ehsan

Tenothrips keruing **sp. n.** is described from Malaysia. This new species was taken from the flowers of *Dipterocarpus sublamellatus* (local name Keruing kerut) during the recent mass-flowering. The male of this species has a pair of stout setae on abdominal tergite IX, and there are no sternal pore plates. A key to species of *Tenothrips* from Indomalaysia is provided.

Key words: *Tenothrips*, Malaysia, new species, key

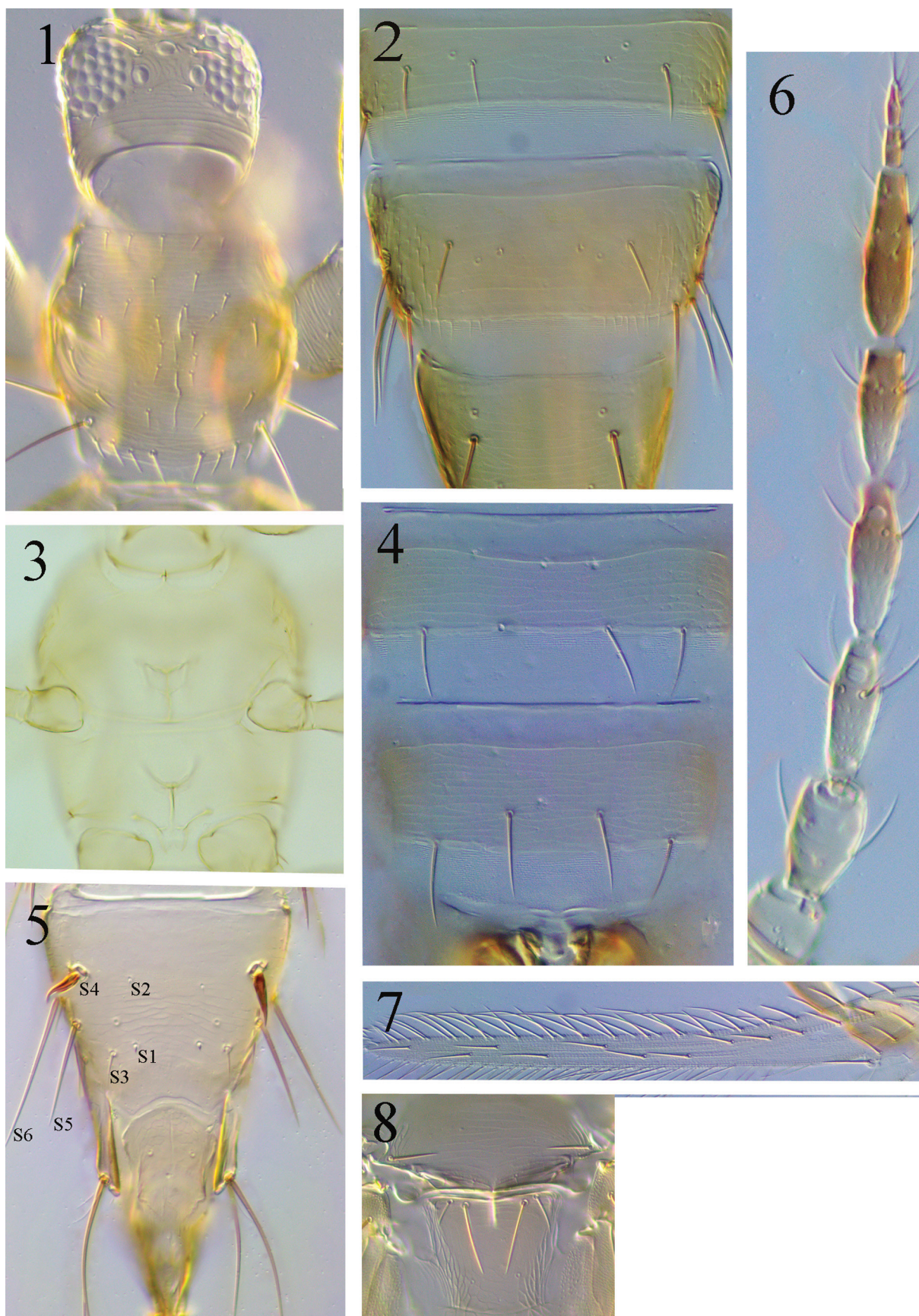
Dipterocarpus sublamellatus (local name Keruing kerut) is a large emergent tree belonging to the plant family Dipterocarpaceae, which is widely distributed in lowland tropical forest below 500 meters altitude. This tree is native to Southeast Asia, and its distribution includes Peninsular Malaysia, Sumatra, Singapore and northern Borneo (Ashton 2004). As one of the important timber species of this region it has been recognised since 1998 as a globally endangered species by IUCN (2019). The reproduction of *D. sublamellatus* is known as supra-annual synchronization reproduction, usually with an interval of a few years, where general flowering occurs followed by mass fruiting. During the recent flowering (March to June 2019) in the lowland rain forest at Pasoh Forest Reserve, Negeri Sembilan state, Peninsular Malaysia (2590 N, 102190 E, altitude 75–150 m), we observed thrips pollinating these Dipterocarp trees. One of the thrips species recorded is described below as a new species in the genus *Tenothrips*.

Currently *Tenothrips* includes 19 species (ThripsWiki 2019). Although *T. frici* has been recorded worldwide (Moulton 1936; Mound *et al.* 2019; Mound & Ng 2009), most of these species are from the Mediterranean Region and also North America, except for *Tenothrips allia* that is known only from the Philippines. In 1967, Bhatti erected *Tenothrips* as a subgenus of *Taeniothrips* by referring to its trapezoidal pronotum and probasisternal flange with distinct anterolateral lobes. Bhatti (1990) raised *Tenothrips* to generic rank with 13 valid species, although as indicated by Zhang *et al.* (2018) the European species in this genus seem to be closely related to the monobasic European genus *Ceratothrips*. Nakahara (1996) established a new genus *Erwartithrips* for species from North America. This genus was distinguished from *Tenothrips* based on the pigmentation of the compound eyes and setae on laterotergite II, but these characters are vague, and Bhatti (2003) synonymised *Erwartithrips* with *Tenothrips*. Morphologically, *Tenothrips* and *Taeniothrips* are almost identical in their large body habitus and brown colour. However, *Tenothrips* always bear three pairs of ocellar setae on the head whereas *Taeniothrips* species all lack ocellar setae pair I (Mound *et al.* 2012).

In this paper, a new species, *Tenothrips keruing* **sp. n.**, is described and a key to species from Indomalaysia is provided. Nomenclatural details are available in ThripsWiki (2019). The following abbreviations and depositories are used: CPS = campaniform sensilla. ANIC–Australian National Insect Collection, Canberra. CISUKM–Centre for Insect Systematics, Universiti Kebangsaan Malaysia, Bangi.

Key to species of *Tenothrips* from Indomalaysia

1. Head and body pale; mesosternum without spinula; fore wing second vein with 3–4 setae *keruing* **sp. n.**
- . Head and body uniformly dark; mesosternum with spinula; fore wing second vein with at least 10 setae. 2
2. Antennal segments uniformly dark, except segment III pale; ocellar setae pair III short; metanotal median setae far behind anterior margin *allia*
- . Antennal segments III–VI basal half pale; ocellar setae pair III long; metanotal median setae arise at anterior margin *frici*



FIGURES 1–8. *Tenothrips keruing* sp. n. (1) Head and Pronotum; (2) Female abdominal tergites VII–IX; (3) Meso- and metasterna; (4) Sternites VI–VII, female; (5) Male abdominal tergites VIII–X; (6) Antennal segments I–VIII, female; (7) Fore wing; (8) Meso- and metanotum.

Tenothrips keruing sp. n.

(Figs 1–8)

Female macroptera. Body pale (Fig. 1), major pronotal setae brown; all legs yellow; antennal segments I–III completely pale, IV–V apical half shaded, VI–VIII uniformly shaded; fore wings uniformly pale. Antennae 8-segmented, segments III–IV with forked sense cone (Fig. 6); antennal segment I without paired dorso-apical setae. Head wider than long; with faint transverse striations in front of first ocellus, ocellar area with irregular striations, vertex with fine transverse striations (Fig. 1); head with three pairs ocellar setae, pair III longest arising outside ocellar triangle; five pairs of short post-ocular setae arising in a row parallel to eye margin; compound eyes near anterior margins with a few pigmented facets. Pronotum as long as wide, with transverse striations (Fig. 1); with more than 20 small scattered discal setae; 2 pairs of long posteroangular setae, posterior margin with 4 pairs of setae, pair I longest. Mesonotum with fine transverse striations; CPS present at anterior margin. Metanotum striate laterally, middle area irregularly reticulate; median setae stout, arising below anterior margin, further apart from each other than from lateral pair (Fig. 8). Meso- and metafurca without spinula but mesosternum with median longitudinal thickening (Fig. 3). Fore wing first vein with 7 setae on basal half, 3 setae on distal half; second vein with 4 setae (2 at middle, 2 at apex); apical seta of clavus longest (Fig. 4). Abdominal tergite I with transverse lines anteriorly, CPS close to posterior margin; tergites II–VII smooth almost no sculpture on median area mesad of setae pair II; ctenidia absent; tergite VIII with irregular group of microtrichia anteromesad of spiracle, posterior margin with short and irregular comb laterally (Fig. 2); tergite IX with 2 pairs of CPS, mid-dorsal setae (S1) extending beyond apex of X. Pleurotergites without discal setae. Sternites III–VII without discal setae, 3 pairs of marginal setae; sternite VII posterior marginal setae long, S1 arising in front of posterior margin.

Measurements (holotype female in microns). Body length 1625. Head, length 120; width across eyes 140; ocellar setae III 20. Pronotum, length 160, width 170; posteroangular setae 90–110. Metanotum median setae 35. Fore wing length 750. Antennal length 290; segments III–VIII length 60, 50, 35, 50, 10, 10

Male macroptera. Body and fore wing similar to female; tergite IX with a pair (S4) of stout dark setae arising wide apart (Fig. 5); sternites III–VII without pore plates.

Material studied. Holotype female: MALAYSIA, Pasoh Forest Reserve, Negeri Sembilan, on *Dipterocarpus sublamellatus* flowers (Dipterocarpaceae) at tree canopy (height 30m tall), 8–10.iv.2019 (Ng, Y.F. & Ain, N.) (in CISUKM). Paratypes: 13 females, 2 males, all collected with holotype (in CISUKM & ANIC).

Comments. This new species of *Tenothrips* is very different from the other species in the genus as follows: 1. Forewing second vein with 4 setae; 2. Mesonotum without a spinula; 3. Male abdominal tergite IX with a pair of stout setae; 4. Male abdominal sternites without any pore plates. According to Zhang *et al.* (2019), *Tenothrips* is not distinguished by any apomorphies, and its systematic significance remains unresolved. Similarly, the relationships of this new species are far from clear. The distinctive character states of the male are unusual within *Tenothrips*, and the generic position of the species should probably be re-considered when more materials and further species become available.

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